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REGIONAL COOPERATION AND TECHNOLOGY TRANSFER

Regional cooperation and transfer of technology

Paper submitted by New Zealand**

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INTRODUCTION

The following is a summary of the technical assistance provided by the New Zealand Department of Survey and Land Information to Pacific Island nations and other countries throughout the world. Many of the projects have involved training and the transfer of technology and a number have included funding assistance.

ANTARCTICA

Mapping:

The department cooperates with the United States Geological Survey (USGS) in the production of 1:50,000 topographical mapping of the Dry Valley/McMurdo area of Antarctica. The department's contribution includes aerial photography, survey control, photogrammetric plotting and final cartography.

Five sheets were published in 1993 and seven sheets are currently in production.

Recently the Convoy Range - Cape Roberts Area and Ross Island were flown as part of a USGS/DOSLI joint project. Another 30 small areas were flown for the US National Science Foundation, ENEA (Italian: Programma Nazionale di Ricerche in Antartide), ICAIR (International Centre for Antarctic Information and Research) at Christchurch, and the NZ Antarctic Programme. Most of these areas are on Ross Island, or in the Dry Valleys Area, or near the Italian Station of Terra Nova. They were flown for scientific research, penguin studies, base camp site histories and environmentally sensitive areas.

Surveying:

Each austral summer the department selects a surveyor to provide survey support for both New Zealand and United States field parties operating in the Ross Dependency region of Antarctica. The work is coordinated by the New Zealand Antarctic Programme following requests from the various scientific event leaders.

Assistance to scientific parties usually falls under the broad headings of levelling/heighting, position fixing, movement monitoring, topographical mapping and precise setting out.

In addition to the services provided to the scientific parties, the surveyor also undertakes work for the New Zealand Antarctic Programme to assist in its support of the New Zealand Antarctic research programme.

The surveyor also carries out any work that might be required to maintain, extend or refine the survey control system that has been established over the McMurdo Sound/ Dry Valleys/Ross Island area to facilitate surveying and mapping activities.

Projects that have been undertaken during the reporting period include:

- monitoring of Shackleton's hut at Cape Royds and Scott's huts at Cape Evans and Hut Point
- levelling the lakes in the Dry Valley area
- checking the tide gauges at Scott Base and Cape Roberts
- survey tasks in association with scientific investigations in the vicinity of Granite Harbour and the Mackay Glacier tongue

- laying out seismic lines near Ross Island (10 km long) and at Wilkes Basin (375 km long)
- surveying ice movement profiles across the Upper Taylor Glacier

COOK ISLANDS

New Zealand produces a series of 12 maps of the Cook Islands at 1:25,000 scale. Atiu and Mauke, the final map of the series, is due to be published in March 1994, completing coverage of the group.

Two Cook Island trainees visited the department on a two week study of LIS/GIS applications.

WESTERN SAMOA

In 1989 New Zealand arranged for a surveyor to be seconded to assist in improving the integration of cadastral surveys in Western Samoa. This continuing project involves locating, evaluating and upgrading existing survey control traverses and connecting these to the cadastral survey.

Two DOSLI staff, experts in land status and tenure investigations, prepared an inventory for major government land transactions.

A staff member of the Western Samoa Department of Lands and Environment received three months training in surveying and management in New Zealand.

DOSLI also assisted with a review of the use of GIS and provided advice on an indigenous land titling system.

New Zealand published a new map of Samoa in 1992. At a scale of 1:250,000, the map shows both Western Samoa and American Samoa, and includes an enlargement of Apia.

NIUE

Two New Zealand personnel assisted the Niuean government in implementing its land titling project. In addition to carrying out survey work and upgrading survey records they introduced computerised systems to the survey and draughting divisions of the Niue Lands and Survey Department as well as to the Land Court. This included the introduction of a small land information system and the automation of some land court records.

The map of Niue produced by New Zealand is currently being redesigned at a scale of 1:50,000 and a fully revised edition is to be published in 1995.

FIJI

The New Zealand Department of Survey & Land Information has just completed a management services contract with the New Zealand Ministry of Foreign Affairs & Trade to provide support to the Fiji Government's Land Information System as part of New Zealand's Overseas Development Assistance Programme. This contract began in October 1991 and arose from earlier work in 1990 when two consultants from DOSLI visited Fiji and, after studying the Fiji situation, produced a Land Information Strategy covering the first stage of a programme for a national LIS. The strategy was approved by the Fiji Government and in October 1991 an adviser was seconded by the department to Fiji to assist in the implementation of a 27 month programme.

Other components of New Zealand aid included training initiatives (including New Zealand universities, the Open Polytechnic of New Zealand, short term attachments of Fijian LIS staff to DOSLI, and short term consultancies involving departmental staff and private consultancies) and funding to Fiji for hardware expenditure and software development.

The adviser's role was wide and included:

- setting up a training programme and running some of the training initiatives
- policy and management advice to Fijian senior and middle level managers in a variety of government departments and statutory agencies.
- project management
- software customisation and development

The first stage of the Fiji LIS was based on six microcomputer based local area networks linked into a wide area network by a broad spectrum radio link . On these local area networks were 13 sub-systems. Access to all of these systems was possible from any of the departments involved. In addition a successful trial was run using dial-up access by modem and banks, lawyers and private surveyors involved in that trial were very enthusiastic about the ease with which they could access a wide range of land information.

December 1993 was the scheduled end of the first stage of the Fiji LIS programme and all 13 sub-systems are now operational. With a few minor exceptions, data capture programmes are complete. This includes the Central Index, the system linking all the sub-systems.

TONGA

Three senior surveyors from Tonga spent two weeks in New Zealand gathering information and viewing new technology in preparation for upgrading their facilities and services.

SOLOMON ISLANDS

Advice was provided regarding the Pacific Islands survey training course and also on an indigenous land title system.

VANUATU

A brief consultancy was provided on land leasing systems and on improving land records.

BRUNEI DARUSSALAM

The department is involved in a joint project with a private sector firm to convert Brunei Darussalam's topographical mapping from graphical to digital format. DOSLI's role is to provide training and technical advice.

PAPUA NEW GUINEA

Two executive and four provincial land administration personnel from the PNG Department of Lands and Physical Planning attended training courses in DOSLI's Hamilton office.

HONG KONG

The Principal Surveyor of the Hong Kong government survey agency visited the department to study DOSLI's cost recovery regime, marketing of survey and mapping and continuing training programmes.

BAHRAIN

A senior staff member from DOSLI spent two years in Bahrain in the Ministry of Housing, Survey Directorate as manager of the cadastral survey division.

DOSLI's GPS unit also provided consultancy services and measured a small scheme which tested the strength of the main survey control network.

KUWAIT

The Director-General/Surveyor-General of DOSLI, Mr W A Robertson served on the United Nations Kuwait/Iraq Boundary Commission which established the international border between Kuwait and Iraq. DOSLI carried out the ground survey and produced maps in a joint project with Swedsurvey, the Swedish national survey organisation. The survey work included the introduction of an accurate geodetic control network and the establishment of boundary reference points and ground control points for aerial photography. The boundary was demarcated with substantial concrete blocks at 2 km intervals.

The mapping work was done in stages, the first being the production of 1:25,000 scale orthophoto maps with 5 metre contours. The 35 maps provided the base maps covering the entire border region. The eastern border, along the Wadi Al Batin was profiled from 1:6000 scale photography to determine the thalweg (the line of lowest points) of the wadi at 2 km intervals. Stage two required the production of 1:2500 scale orthophoto maps over specific regions where detailed investigations were required. The final product was an overall map at scale 1:250,000 showing the entire border area. Satellite imagery utilising four LANDSAT TM scenes enabled a full colour image map, with overlaid contours, roads and other detail, to be produced.

PAKISTAN

The Director-General/Surveyor-General also acted as consultant to the World Bank to assist the Surveyor General of Pakistan to develop a 20 year mapping and land information strategy to support the Shelter for Low Income Communities Project. The end result is new, extensive coverage of orthophotography over cities, urban areas and rural centres of activity.

ZAMBIA

DOSLI survey personnel provided support to a private New Zealand engineering firm, by carrying out survey fixes using GPS equipment.

RUSSIA

DOSLI personnel provided advice to the Russian Committee for Land Reform on the establishment of a land tenure system. Visits have been exchanged.

CHINA

Delegations have been exchanged between DOSLI and the National Bureau of Surveying and Mapping of China (NBSM) with a view to benefiting from sharing knowledge and experience.

OTHER OVERSEAS CONTACTS

In addition to the contacts with overseas agencies outlined above, visits were also received from representatives from the United States, Australia, Oman, Sweden, South Korea, Uganda, Norway, Canada, the United Kingdom and the United Nations.